

1. (currently amended) A method of producing an aqueous solution of thermodynamically free iodine from iodine vapor transferred across a porous membrane from an iodine source, comprising the following steps:

selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;

providing a source of iodine vapor;

providing such membrane in the form of an enclosure to contain the source of iodine vapor;

providing a vessel that contains a receiving medium for the iodine vapor;

and

permeating iodine vapor across the membrane.

2. (original) The method of claim 1 wherein the iodine source is iodine as an iodine-releasing solid or an iodine-releasing liquid that contains iodine in solution or in a complex form.

3. (original) The method of claim 2 including the additional steps of:
absorbing the iodine vapor in the liquid contained in the vessel;
mixing the iodine vapor with inert gas contained in or flowing through the vessel; and
controlling flow of the receiving medium such that it is either static or moving.

4. (original) The method of claim 3 including the additional step of:
passing the inert gas containing iodine vapor through a liquid medium that absorbs said iodine vapor.

5. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is an organic plastic material.

6. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is an inorganic material.

7. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is single ply.

8. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is multi-ply construction wherein the plies are of the same or different composition and structure.

9. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is a continuous film.

10. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is non-woven.

11. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is a nanostructure.

12. (original) The method of claim 1 wherein the iodine vapor-permeable membrane is perforated.

13. (original) The method of claim 1 wherein the membrane material is substantially non-permeable to solid iodine.

14. (original) The method of claim 13, including the additional step of; transferring iodine vapor through discrete pores in the membrane of less than 5 microns.

15. (original) The method of claim 1, including the additional steps of:
providing a vessel of a material that is substantially impermeable to iodine vapor and essentially unreactive towards iodine;
maintaining a temperature of the receiving medium in the range of about -10 to 110 degrees Centigrade;
maintaining a pressure in the vessel containing the receiving medium in a range from vacuum to about 5 atmospheres; and
constructing and testing the vessel for the specified pressure rating.

Claims 16 – 25 (withdrawn)

26. (currently amended) A method of preparing an iodine fluid for dietary purposes directly or by blending, comprising the steps of:
selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;
providing such membrane in the form of an enclosure to contain the source of iodine vapor;
providing a source of iodine vapor within the enclosure;
providing a vessel that contains a receiving medium for the iodine vapor;
controlling a flow of the iodine-receiving medium in the vessel;
removing a measured volume of iodine solution from the vessel in a batch or continuous mode; and
preparing an iodine fluid for dietary purposes.

27. (currently amended) A method of preparing a fluid for disinfecting, sterilizing and preserving food ingredients, food stuffs, feed ingredients and feedstuffs, comprising the steps of:
selecting a porous membrane that is permeable to iodine and water vapor but impermeable to liquids and solids;

providing such membrane in the form of an enclosure to contain the source of iodine vapor;

providing a source of iodine vapor within the enclosure;

providing a vessel that contains a receiving medium for the iodine vapor;

removing a measured volume of iodine solution from the vessel in a batch or continuous mode; and

preparing a fluid for disinfecting, sterilizing and preserving food ingredients, food stuffs, feed ingredients and feedstuffs.

28. (withdrawn)

29. (withdrawn)

30. (currently amended) A method for producing an aqueous solution of a halogen or mixture of halogens, comprising the steps of:

selecting a porous membrane that is permeable to halogen and water vapor but impermeable to liquids and solids;

providing such membrane in the form of an enclosure to contain the source of halogen vapor;

providing a source of halogen vapor within the enclosure; and
providing a vessel that contains a receiving medium for the halogen vapor.

31. (original) The method of claim 30 including the additional steps of:
absorbing the halogen vapor in the liquid contained in the vessel;
mixing the halogen vapor with inert gas contained in or flowing through the vessel; and
controlling flow of the receiving medium such that it is either static or moving.